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SUBJECT Dneprostroi Sewage Construction

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THIS IS UNEVALUATED INFORMATION

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1. In 1931 the Soviet organization known as PVK (Construction Section for Water Lines and Sewage System of the Dneprostroi). 25X1
This organization had as its main purpose the construction of water lines and sewage systems for the entire industrial area. As the various plants were completed the administrative set up changed. The plants were transferred to the exploiting agency. An organization known as OKS (Section of Capital Construction) was formed which decentralized construction work and which completed the work planned. 25X1

The Dneprostroi area, built upon the left bank of the Dnepr /Dnieper/ River, was about three kilometers wide and 15 kilometers long. The following plants were built on the site:

a. The aluminum combine plant (associated with the electrode plant).

b. The ferro-alloys plant.

c. The blast furnace plant (four furnaces).

d. The chemical-coke plant.

e. The Martin-furnace plant.

f. The plant manufacturing tool and die steel.

g. The sheet rolling plant.

h. The magnesium plant.

i. The fireproof brick plant (for blast furnace linings).

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j. The repair shop.

k. The vocational school for repair mechanics and foundry workers.

The following plants, located outside of the area proper, were to be serviced with water and sewage systems as well as the above plants:

a. Plant #29, manufacturing airplane motors.

b. The locomotive manufacturing plant.

c. The silicon-carbide plant.

Besides the above plants the water and sewage system was to serve the needs of the so-called "Great Zaporozhe", the new portion of Zaporozhe which was also known as the "socialized city".

2. PVK was also responsible for the construction of pumping stations which were to be used to raise water from the Dnepr River and pump it into the water system. This water was purified and chlorinated for drinking purposes. PVK also had the job of constructing the main sewer which carried the sewage to a disposal plant located at the village of Novo Nikolaivka where the sewage was treated and later passed on into the lower Dnepr.

3. The water mains for the area were laid in pairs or in three lines, all placed parallel. The mains were made of cast iron with a diameter of 1,200 m/m. Elbows were of the same material. The pipes were joined together with lead. There were four types of pipe used for the branch lines, as follows:

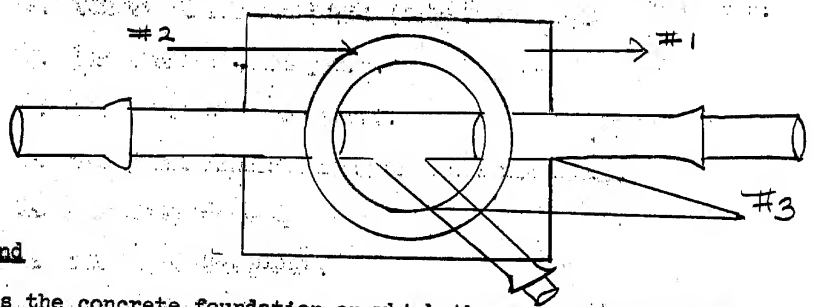
a. Cast iron pipes, 100 m/m in diameter, held together with concrete.

b. Cast iron pipes sealed with rubber washers.

c. Iron pipes joined by welding.

d. Asbestos and concrete pipes with flexible joints. The joints were asbestos sleeves lined with rubber rings.

4. For sewage disposal, concrete pipes ranging from 100 to 500 m/m in diameter were used. Ceramic pipe was used where it was felt the sewage contained chemical elements that would be harmful to concrete pipe. In certain cases where sewage pipes had to pass under railroads or heavily traveled roads, iron pipes were used. Whenever a turn or curve was necessary in laying sewer pipe, curved pipe was not used. Instead, wells were constructed of concrete sectional rings. These sections were laid one on top of another and the whole placed on a concrete base.



Legend

#1 is the concrete foundation on which the sections are laid.
#2 is a concrete and steel ring 1,000 m/m in diameter and 8/10 of an meter in height.
#3 is where a cement mixture is placed to hold the pipes in place.

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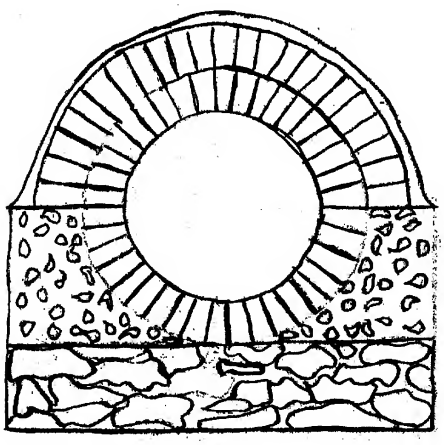
The height of the well depended upon the depth at which the sewer pipe was laid and which, accordingly, determined the number of sectional rings to be used. The top of the well was reduced in order to provide a narrower opening at the street level; the reduction from 1,000 m/m to 600 m/m being accomplished by a cone-shaped ring. Iron rings were placed inside the well for easy access by workmen and similar wells were placed along straight lines at intervals of 40 to 60 meters for inspection and cleaning purposes.

6. All sewage lines eventually entered into one of two collectors which were laid on the bottom of two natural ravines or depressions. These collectors were called:

a. The collector of the aluminum plant and was along the Depression #1.

b. The collector of the metallurgical plant along the Depression of Kapustyanka.

Both collectors were of brick construction and were formed into the shape of covered canals. First a rubble bed was placed in the trench to a thickness of 200 m/m. This rubble was kept together by a loose mixture of cement. / semicircular concrete bed was laid on this rubble base to accommodate the conduit or canal. This latter was constructed of wedge-shaped brick to form a circular canal. The inside, bottom of this bricked circle was carefully checked as laid in order to make sure the proper grade, or drop was provided. Over the top of this bricked canal was laid a half-circle of wedge shaped brick for protection and over the whole was a thin, concrete layer for additional protection.



The inside diameter of the "Aluminum Plant Collector" was 800 m/m while the "Metallurgical Plant Collector" was 1,000 m/m. Where it was necessary to provide for curves, brick wells were constructed with an open, curved canal at the bottom. The inside curve was constructed in such a fashion as to permit the sewage to flow at the proper tangent measured in relation to the angle of the crossing axis of the canals to be accommodated by the curve. The top of these wells were square and were covered by a cast iron cover.

7. It should be noted that the above two collectors were not the main sewage canal. This was of much more complicated construction due to the fact that it was laid along the bank of the Dnepr River where there was much underground water close to the surface. In constructing this main collector it was necessary to do the work during the dryest season, for the trenches had to be dug to a depth of six to seven meters while the underground water level, even during the driest season of the year, was as close to the surface as 0.8 to 0.9 meters. It was necessary to support the walls of the trenches with tongue and grooved lumber in

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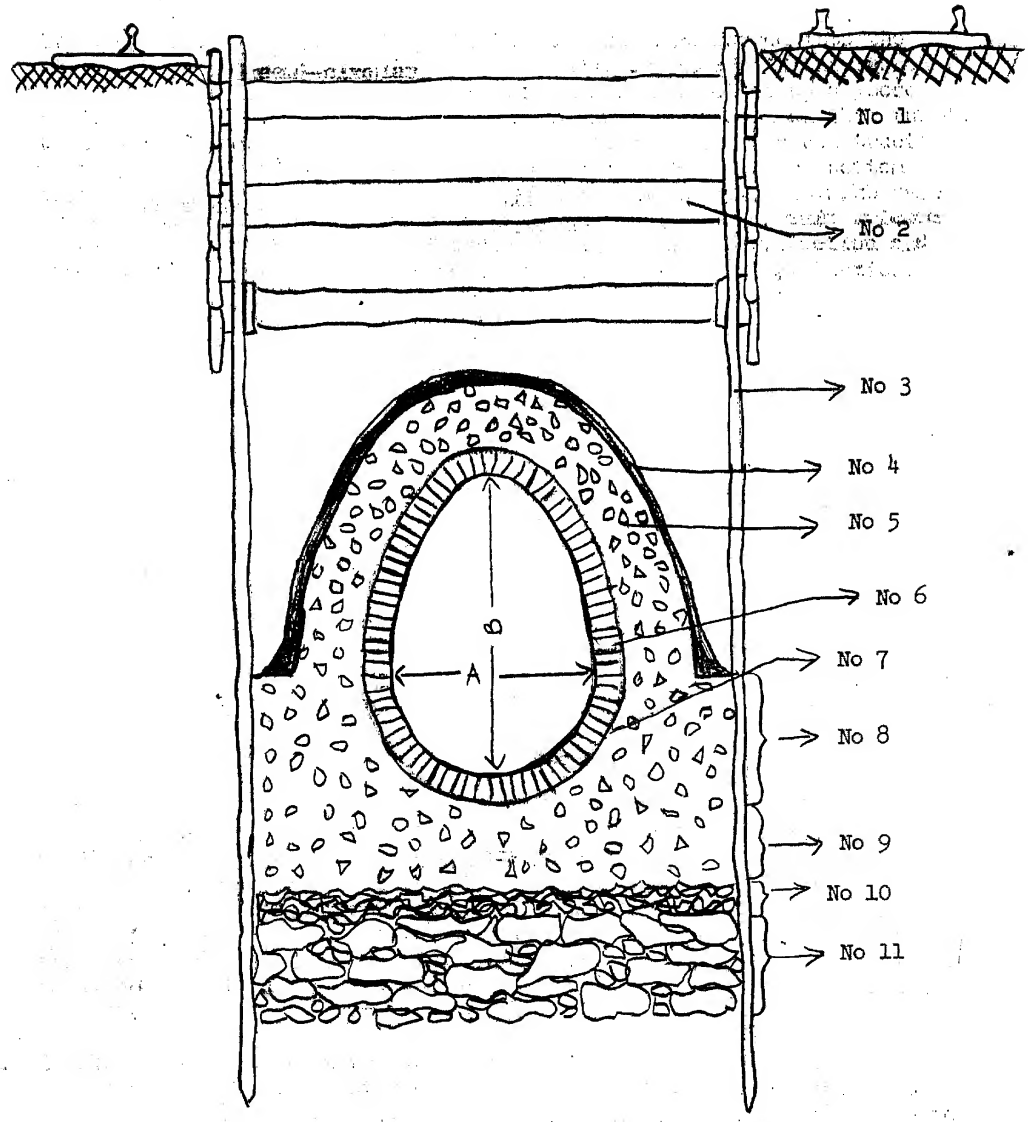
order to provide as tight a surface as possible against seepage. The lumber used was eight meters long and 0.25 meters wide and about three inches thick. The tongue and groove was triangular.

8. The wooden supports were driven into the ground by an electric hammer which was supported on two carts which moved along the top of the ground. After the supports were driven into the ground the trench between was excavated by hand; the first meter was dug by women and behind them came men, who dug the rest of the trench. The dirt was lifted out in special metal containers attached to an electric hoist. Concrete mixing machines were located every 40 to 50 meters along the trench site. These machines were loaded by hand. The completed mixture was loaded into hand pushcarts and pushed along a narrow-gauge rail and dumped into the trench along wooden chutes.



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Legend for Diagram on Preceeding Page

No 1	A solid board wall, laid horizontally; the boards being two inches thick.
No 2	Log braces, 20 to 24 cm in diameter, used to brace side-walls.
No 3	The tongue and groove lumber supports which are driven into the ground.
No 4	Cement cover.
No 5	Brick or brick and concrete arch.
No 6	Wedge shaped bricks laid in circular canal.
No 7	Asphalt and tar paper insulation.
No 8	Concrete stool or bed.
No 9	Concrete base.
No 10	Rubble base, held together with loose concrete mixture.
No 11	Large rocks laid in loosely for drainage.

9. At the point where the collector from the metallurgical plant enters the main collector along the bank of the river, the inside, cross measurement is 1,200 $^{m}/m$. The main collector, however, is 1,600 $^{m}/m$ across and 2,200 $^{m}/m$ in height. /See A and B on diagram, page 4/

10. All construction materials for PVK were received through a Supply Section and had to be requisitioned well in advance of the intended date of need. However, even though requisitions were submitted early, very often the Supply Section was unable to furnish supplies because manufacturers fell behind in their production. Materials were always in short supply which held up the construction work or caused substitutes of inferior quality to be used. If work was held up for certain items, when the items were received the work went forward so fast that quality was affected. In order to overcome this constant shortage of supply all kinds of emergency measures had to be used. Skilled workers were used as ordinary laborers which they disliked.

11. Very often administrators had to borrow materials from other enterprises. Such transactions were authorized by the government and were accomplished by the use of transfer documents. Since all construction materials could be used for trade purposes, all supply officers, chiefs of stations, etc, tried to get as much of all types of construction materials as possible even though they had no direct use for them. This caused further deterioration of the supply system.

12. The poor transportation system was a serious drawback. For the first time in Soviet history, during the construction of the Dnepestroy site, railroad lines were laid from the main lines directly to the construction area to facilitate the movement of materials and to provide for direct shipment without unloading and reloading. However, the construction area was so large and the units so scattered that all could not be accommodated by this method, for rails and ties were likewise in short supply. Automotive transportation was insufficient and roads were poor. This all meant falling back on the horse and cart. A great many horses and wagons were utilized and teamster sections were built throughout the area.

13. Because of the great scope of the construction and because mechanical

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equipment was scarce and organizational and administrative methods poor, tens of thousands of workers were needed at Dneprostroi. At the time of their initial employment the great majority of workers had no training nor qualifications at all. From 25% to 30% of all workers were women. Prison labor was also used.

14. Work norms were increased annually on the basis that progress was always being made. Actually, those who made up the schedules for norms would have been liquidated if they failed to recognize the fact that progress was taking place. Norms were always higher than the actual output that could be accomplished. Because of this the leadership, or those in charge, were continually faced with the problem of reporting progress and accomplishment of norms when they had actually failed to do so. Failure to report accomplishment and progress meant liquidation. Reports, therefore, were usually false and never reflected true output. As an example, the work week was 48 hours. One method of falsifying reports was to promote workers to a higher grade in which they did work where no norms were set. However, they actually continued on at their old jobs and could be made to work longer hours, their pay being five to 10% higher. Frequently shock campaigns or special work days were announced, on which the workers contributed an extra day's work without pay. The money earned was given over to such organizations as MOPR (International Organization for the Promotion of Revolution) or to the relief of prisoners of the capitalists. Penalties for failure to contribute work for such causes were severe.

15. As a rule the piece-work pay system was used. Even so, extra monetary rewards had to be made for "overfulfillment of norms". This meant little because of the small buying power of the ruble. Of greater incentive were special food ration rewards; the right to buy extra food. At one point workers digging trenches made between six and seven rubles a day plus one kilogram of bread. They could sell the bread on the black market for 15 rubles and were, therefore, not interested in monetary rewards.

16. The qualifications of Soviet engineers were very low also. At various sites [redacted] if they met up with difficult problems they made no attempt to solve them. 25X1
As an example, one engineer constructed a sewer around a rock formation rather than remove the rock. [redacted] many instances where wooden 25X1
supports were improperly placed which permitted underground water to fill the sewage canals. Many walls caved in soon after they were dug and had to be redug. At one point where open trenches were to be built for surface water drainage they were to pass under a railroad which had not yet been built. However, the railroad was put in first, necessitating the tunneling of 146 meters of embankment in order to place culverts.

19. The Soviet engineer was constantly harrassed with nontechnical duties. He had to encourage team competition, develop stakhanovite workers, keep statistical accomplishments, see to the welfare of the workers and to train his workers constantly. He had to give numerous lectures and encourage and promote individual interest. He had to see that all workers fulfilled their quotas on state loans. He was judged not only on his technical accomplishments but also on his political qualifications, a combination of which was difficult.

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